

**STUDIES OF NEOTROPICAL CADDISFLIES LVI: DESCRIPTIONS OF FIVE
NEW SPECIES OF THE GENUS *METRICHIA* ROSS (TRICHOPTERA:
HYDROPTILIDAE) FROM PAKITZA, PERU, WITH A CHECKLIST AND
BIBLIOGRAPHY OF THE DESCRIBED SPECIES OF THE GENUS**

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Abstract.—Five new species of the genus *Metrichia* from Peru are described, diagnosed and figured: *M. pakitza*, *M. diosa*, *M. madre*, *M. adamsae*, and *M. helenae*. Full generic status for *Metrichia* is accepted, the 58 described species are listed with their authors, date of publication and known distribution, and a bibliography presented for the papers in which the species were described or new country records given.

Key Words: *Metrichia*, Trichoptera, Hydroptilidae, species list, bibliography, new species, Peru

The genus *Metrichia* has a wide distribution in the New World, being found from the southwestern United States south to central Chile and Argentina and all the larger Antillean islands. There seems to be a tendency for the species to breed in small, tumbling streams, cascades and springs. Adults are most frequently taken by sweeping near the larval site, but a Malaise trap at the same site will often produce large numbers. They are not commonly attracted to lights at night, but now and then a few specimens will show up. As a consequence of this restriction of habitat and retiring habits, a true understanding of their diversity is only slowly emerging.

The genus was erected by Ross in 1938 for the Texan species, *Orthotrichia nigratta* Banks. However, Flint in 1968a reduced *Metrichia* to the status of subgenus in *Ochrotrichia* due to the morphology of the head and thorax, spur count, structure of the male genitalia and especially on the near identi-

cal morphology of the larval stage. Subgeneric status has been followed by various authors at various times, most notably by Marshall (1979) in her reclassification of the family, and not by others (Blickle and Denning 1977, give cogent reasons). Marshall (1979) placed *Metrichia*, as a subgenus, in the subfamily Hydroptilinae but created the tribe Ochrotrichiini in which she included only the New World genera *Ochrotrichia* sensu stricto, *Metrichia* and *Rhyacopsyche*. Wiggins (1996) introduced several characteristics believed to distinguish the larvae of the two subgenera, and then recognized both at the full generic level. Although some recent larval collections are difficult to place generically, we follow Wiggins' lead in this paper and recognize the genus *Metrichia* as an independent genus. Jacquemart (1963) created the genus *Argentitrichia* for the single species *A. bulbosa* Jacquemart, 1963. Marshall (1979) correctly synonymized *Argentitrichia* with *Metrichia*; the species, however, is valid.

The first sketchy description of *Metrichia* larvae was for the type species by Edwards & Arnold (1961). The next description, somewhat more complete, was of the Puerto Rican *M. juana* (Flint) (as *Ochrotrichia juana*, Flint 1964). Wiggins (1996) gave the most complete description with figures of *M. nigrutta*, together with a differential generic diagnosis. Botosaneanu & Flint (1982) reported on some larval morphology and showed interesting variation in larval case structure with the development of dorsal silken tubes, but all from unknown species in the genus. Nothing is reported on larval food habits.

Because the number of described species has increased rapidly in recent years, and their descriptions are widely scattered in the literature, we present the following checklist with known distributions. A few references are given in the Literature Cited which are not cited in the text; they contain published records for a species from a country that is not otherwise recorded.

- aberrans* (Flint 1972) Mexico
adamsae Flint & Bueno, herein Peru
anisoscyla (Flint 1991) Colombia
araguensis (Flint 1981) Venezuela
arenifera (Flint 1980) Peru
argentinica Schmid 1958 Argentina
arizonensis (Flint 1972) USA
avon (Bueno 1983) Mexico
bidentata (Flint 1983) .. Argentina, Chile
biungulata (Flint 1972) Panama
bola (Flint 1991) Colombia
bulbosa (Jacquemart 1963) ... Argentina
cafetalera Botosaneanu 1980 .. Cuba, Dominican Republic
campana (Flint 1968b) Dominica
carbetina (Botosaneanu 1994) ... Guadeloupe
ceer (Flint 1992) Puerto Rico
continentalis (Flint 1972) Panama
cuenca (Harper & Turcotte 1985) .. Ecuador
cuspidata (Flint 1991) Colombia
dietzi (Flint 1974) Guyana, Surinam
diosa Flint & Bueno, herein Peru
disparilis (Flint 1983) Argentina
espera Botosaneanu 1980 Cuba
excisa (Kumanski 1987) Cuba
exclamationis (Flint 1968b) ... Dominica, Guadeloupe
favus (Botosaneanu, in Botosaneanu & Alkins 1993) Trinidad
fontismoreaui (Botosaneanu 1991) .. Dominican Republic, Haiti
geminata (Flint 1996a) Tobago, Trinidad
helenae Flint & Bueno, herein Peru
juana (Flint 1964) Puerto Rico
kumanskii (Botosaneanu 1991) Haiti
lacuna (Bueno 1983) Mexico
lemiscata (Flint 1972) Panama
lenophora (Flint 1991) Colombia
macrophallata (Flint 1991) ... Colombia
madre Flint & Bueno, herein Peru
madicola (Botosaneanu 1994) ... Guadeloupe
malada (Flint 1991) Colombia, Peru
munieca Botosaneanu 1977 Cuba
neotropicalis Schmid 1958 Argentina, Chile, Peru
nigrutta (Banks 1907, *volada* Blickle & Denning 1977, synonymy by Moulton, Stewart & Young 1994) .. El Salvador, Mexico, USA
pakitza Flint & Bueno, herein Peru
patagonica (Flint 1983) Argentina, Chile
penicillata (Flint 1972) Guatemala
platigona (Botosaneanu, in Botosaneanu & Alkins 1993) .. Tobago, Trinidad, Venezuela
protrudens (Flint 1991) Colombia
quadrata (Flint 1972) Mexico
rawlinsi (Flint & Sykora 1993) .. Dominican Republic
riva (Bueno 1983) Mexico
rona (Flint 1991) Colombia
sacculifera (Flint 1991) Colombia
similis (Flint 1968b) .. Dominica, Guadeloupe
squamigera (Flint 1992) Puerto Rico
thirysae Jacquemart 1980 Chile
trigonella (Flint 1972) Honduras, Mexico
trispinosa (Bueno 1977) Mexico

warema (Flint 1974) Surinam
yalla (Flint 1968a) Jamaica

The following five new species do not, on the whole, fit well into the species groups proposed by Flint (1972), nor do many of the other species described in recent years. It is apparent that a completely new approach to defining monophyletic groups will have to be taken, but with so many species yet to be made known such a study is still premature. The five species described here are all rather atypical of the genus in the structure of their abdomens. Most species have various sacs, pockets, and hair brushes on their abdomens. Only *M. helenae* of the Pakitza species clearly bears hair brushes. However, such brushes are easily removed from the abdomen during clearing and could have been lost from the other species, and small pockets between segments are difficult to see with material in the best of condition, which most of these examples are not. The wings of all specimens are completely denuded, thereby rendering it impossible to ascertain if any bear specialized patches of scales on their wings. The apex of the phallus of the unique specimen recorded as *Ochrotrichia* (*M.*) n. sp. 1 (Flint 1996b: 399) has been lost, rendering this specimen unfit for description.

The types of these species are presently held in trust at the National Museum of Natural History, Smithsonian Institution, for ultimate deposition at the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru.

***Metrichia pakitza* Flint and Bueno,
 new species
 (Figs. 1–3)**

Ochrotrichia (*M.*) n. sp. 2, Flint 1996b: 399.

This species is not closely related to other described species, only the following, *M. diosa*, n. sp., being clearly related. Indeed, in most parts of the genitalia the two species appear nearly identical. However, the

antennae in *M. pakitza* are unmodified, the segments being short and terete, and the clasper bearing a small apicoventral angle.

Adult.—Length of forewing, 1 mm. Color in alcohol, brown. Male antenna very short, hardly as long as width of head, of 17 segments, all short and cylindrical. Male abdomen lacking apparent modifications. Male genitalia: Ninth segment in lateral aspect one and one-half times longer than high; posterior margin nearly vertical, anterior margin narrowed and slightly produced anteriad. Cercus in lateral view thumblike. Tenth tergum lightly sclerotized, hoodlike. Dorsolateral hook in dorsal view, apex hooked laterad; in lateral view with apical portion curved sharply ventrad. Inferior appendages in lateral view broad basally, dorsal margin slightly sinuate, ending in an apicodorsal point, posterior margin concave with a smaller posteroventral angle. Phallus with two curved hooks arising at different levels of the apical portion, apicalmost hook shorter, midway between preapical hook and tip, preapical hook longer and straight in dorsal view.

Material.—Holotype, ♂. PERU: Madre de Dios: Manu, Pakitza, 12°7'S, 70°58'W, 250 m, Trail 2, 1st Stream, 14–23 September 1988, O. Flint & N. Adams, Malaise trap, night collection (NMNH).

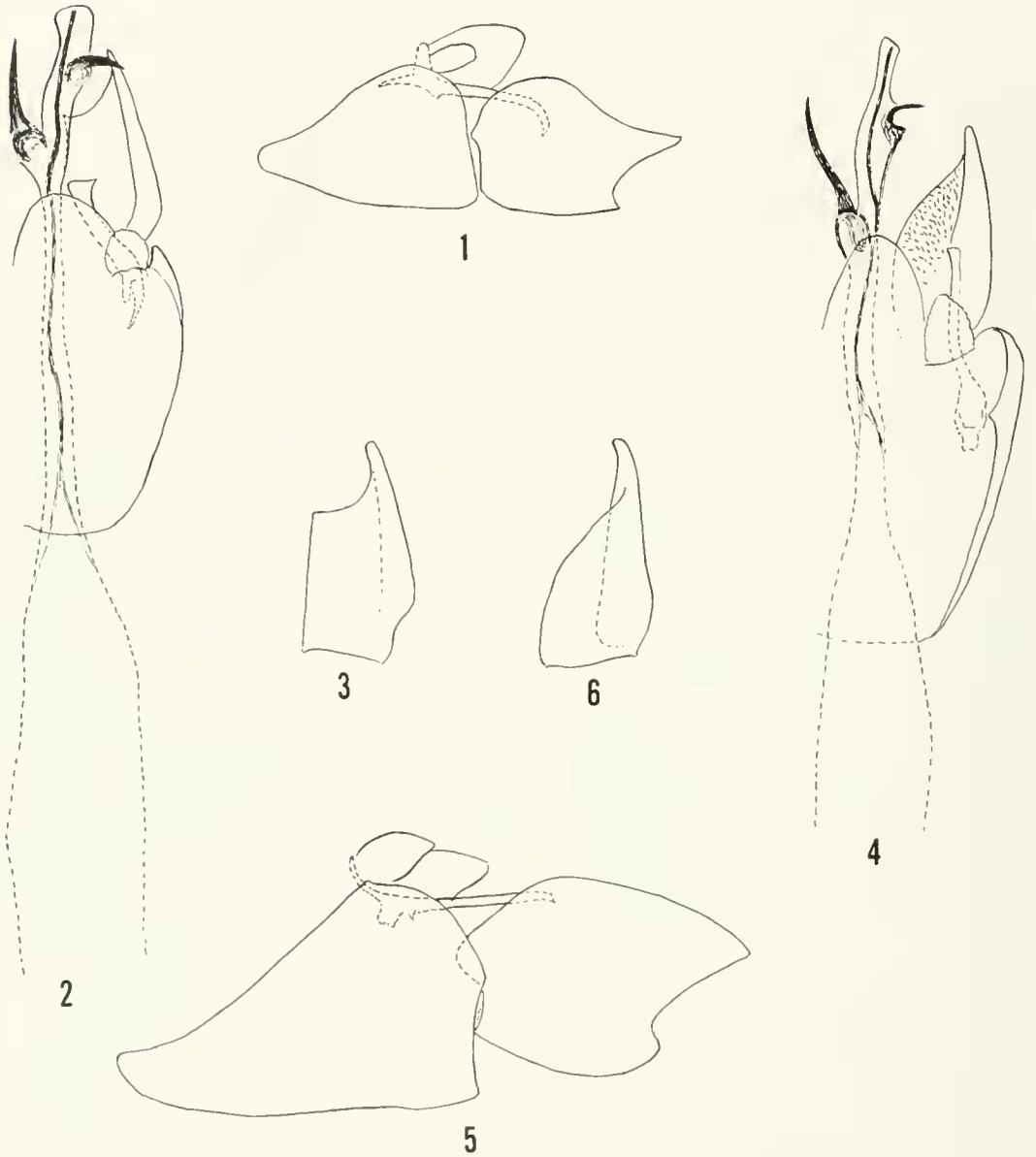
Etymology.—Named for the locality in Peru where the species was collected.

***Metrichia diosa* Flint and Bueno,
 new species
 (Figs. 4–6)**

Ochrotrichia (*M.*) n. sp. 4, Flint 1996b: 399.

This species is very closely related to *M. pakitza*, n. sp., being reliably distinguished by the presence of much compressed antennal segments and the lack of the apicoventral angle on the inferior appendages.

Adult.—Length of forewing, 2 mm. Color in alcohol, brown. Male antenna of 17 segments; segments 5–13 much compressed, about twice as high as long. Male



Figs. 1-6. *Metrichia*. 1-3, *M. pakitza*. 1, Male genitalia, lateral. 2, Same, dorsal. 3, Inferior appendage, ventral. 4-6, *M. diosa*. 4, Male genitalia, dorsal. 5, Same, lateral. 6, Inferior appendage, ventral.

abdomen without apparent modifications. Male genitalia: Ninth segment in lateral aspect about one and one-half times as long as high, posterior margin almost vertical; produced anteroventrally. Cercus in lateral aspect, hood-shaped. Dorsolateral hook long, slender; in lateral view apex with small ventral point. Inferior appendage in

lateral view, longer than high, with the apicodorsal portion produced and angulate; in ventral aspect, with the basal portion wider than the apical, the inner margin sinuate; inner face covered by many micro spines. Phallus with two well developed spines, origins well separated, basal spine much longer than apical and nearly straight,

preapical spine small and sharply curved laterad; internal tubule well developed.

Material.—Holotype, ♂. PERU: Madre de Dios: Manu; Pakitza, 11°56'S, 71°18'W, 250 m, kitchen stream, 12–18 September 1989, N. Adams et al., Malaise trap, night collection. Paratypes: Same data, 1 ♂ 3 ♀; same, but day collection, 1 ♂, 3 ♀; same, but Trail 2, 1st Stream, 14–23 September 1988, O. Flint & N. Adams, Malaise trap, day & night collection, 1 ♂ (NMNH).

Etymology.—*diosa*: Spanish word for goddess, also recalling the name of the Province, Madre de Dios.

***Metrichia madre* Flint and Bueno,
new species**

(Figs. 7, 8)

Ochrotrichia (*M.*) n. sp. 3. Flint 1996b: 399.

Because of the presence of a very long phallus with a long, dark, internal tubule and a short, ventrolateral hook, this species appears to be most similar to *M. neotropicalis* Schmid and *M. patagonica* (Flint). However, *M. madre* can be distinguished from those species by the triangular shape of the inferior appendages in ventral and dorsal view with their toothed posterodorsal margin.

Adult.—Length of forewing, 1.5 mm. Color in alcohol, brown. Male abdomen apparently without any modifications. Ninth segment in lateral aspect almost twice as long as high, the posterior margin arcuate; anterior margin narrowed and slightly produced anteroventrad. Cercus in dorsal view circular, in lateral view thumblike. Dorsolateral hook in dorsal view with subapical angulation, tip angled slightly mesad, in lateral view, apical portion elongate ventrad. Inferior appendage in dorsal view with the apical portion triangular; in lateral view, basodorsal lobe with row of small teeth along posterodorsal margin, ventrally produced in a pointed, triangular lobe. Phallus with a long, dark, internal tubule: apical portion

tapering, with a small, dark, hook ventrobasally.

Material.—Holotype, ♂. PERU: Madre de Dios: Manu, Pakitza, 12°7'S, 70°58'W, 250 m, 14–23 September 1988, O. Flint & N. Adams, Trail 2, 1st Stream, Malaise trap, day & night collection (NMNH).

Etymology.—*madre*: Spanish word for mother, also recalling the name of the Province, Madre de Dios.

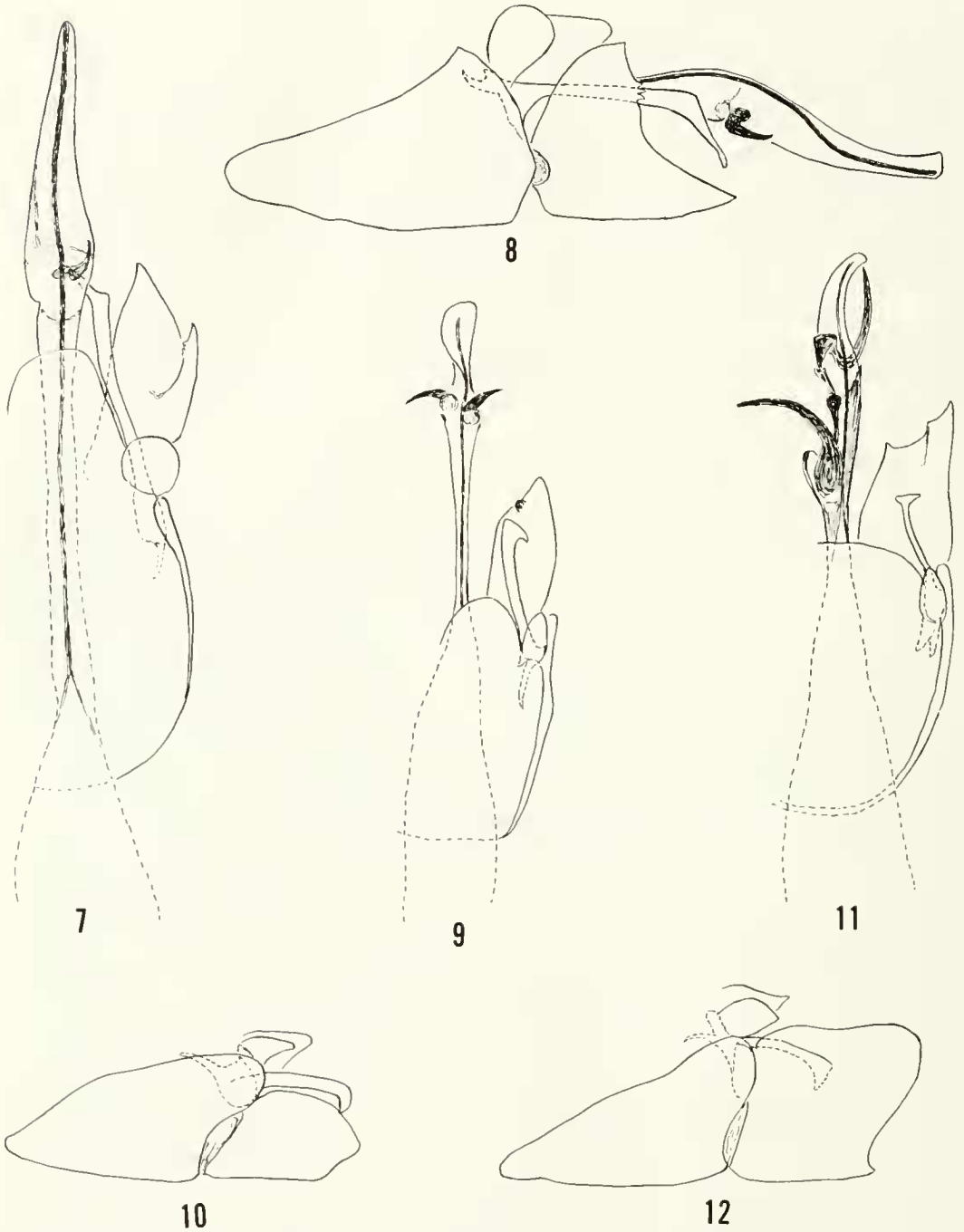
***Metrichia adamsae* Flint and Bueno,
new species**
(Figs. 9, 10)

Ochrotrichia (*M.*) n. sp. 5. Flint 1996b: 399.

This species appears virtually identical in genitalia to *M. malada* (Flint), known from Colombia and Peru. It differs from that species in that the ninth segment is not quite twice as long as high, rather than three times as long, and in apparently lacking all modifications of the abdomen. The abdomen of the unique specimen of *M. adamsae* is not well cleared, thus obscuring any smaller or fainter structures, but nevertheless it seems to lack the many abdominal modifications of *M. malada*.

Adult.—Length of forewing, 2 mm. Color in alcohol, brown. Male antenna of 18 segments, unmodified. Male abdomen without apparent modifications. Male genitalia: Ninth segment almost twice as long as high in lateral aspect; posterior margin sinuate. Cercus ellipsoid. Tenth tergum lightly sclerotized, hoodlike. Dorsolateral hook in dorsal view long, slender, and almost straight with apex hooked laterad. Inferior appendage in lateral view longer than high, with posterior margin obtusely angled; in dorsal view with a small, dark tooth near the posterior margin. Phallus with two, equal-sized, curved hooks arising at almost same level subapically; internal tubule almost half length of phallus.

Material.—Holotype, ♂. PERU: Madre de Dios: Manu, Pakitza, 12°7'S, 70°58'W, 250 m, 9–14 September 1988, Trail 1, 1st



Figs. 7-12. *Metrichia*. 7, 8, *M. madre*. 7, Male genitalia, dorsal. 8, Same, lateral. 9, 10, *M. adamsae*. 9, Male genitalia, dorsal. 10, Same, lateral. 11, 12, *M. helenae*. 11, Male genitalia, dorsal. 12, Same, lateral.

Stream, O. S. Flint & N. Adams, Malaise trap, day collection (NMNH).

Etymology.—It is our pleasure to name this species after Nancy E. Adams, Specialist for Neuropteroids, who collaborated in the collection of this and other species here described.

***Metrichia helenae* Flint and Bueno,
new species
(Figs. 11, 12)**

Ochrotrichia (*M.*) n. sp. 6, Flint 1996b: 400.

This species seems closely related to *M. penicillata* (Flint) based on the overall similarity in shape and structure of the male genitalia. However, *M. helenae*, new species, can be distinguished from that species by the more quadrate shape of the inferior appendage which is not drawn out into an angle at midheight in lateral view. Although both species have lateral hair brushes between the fifth and sixth segments, *M. helenae* lacks the internal sacs of the fifth segment and the other modifications of the male abdomen.

Adult.—Length of forewing, 2 mm. Color in alcohol, brown. Male antenna of 19 segments, unmodified. Male abdomen with large hair brushes dorsolaterally between fifth and sixth segments. Male genitalia: Ninth segment in lateral view twice as long as high, posterior margin sinuate. Cercus leaf-shaped. Tenth tergum lightly sclerotized, small, hoodlike. Dorsolateral hook with apex enlarged, hammer-like, only half as long as inferior appendage; in lateral aspect, with apex hooked ventrad. Inferior appendage in lateral aspect, almost rectangular, apical margin slightly sinuate, with a small apicoventral point; in dorsal aspect mesal face with a small ridge ending in a point on posterior margin at midheight. Phallus with two well-developed, curved spines, origins well separated, apical trough broad and well sclerotized; ejaculatory duct well developed.

Material.—Holotype, ♂. PERU: Madre

de Dios: Manu, Pakitza, 11°56'S, 71°18'W, 250 m, kitchen stream, 12–18 September 1989, N. Adams et al., Malaise trap, night collection. NMNH.

Etymology.—We have the pleasure to dedicate this species to the memory of a great lady and hostess, Helen S. Flint.

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